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Docket No. 4832

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
Before the Board of Patent Appeals and Interferences

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*1773*  
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In re Application of

HIERONYMUS ANDRIESSEN ET AL

APPEAL No.

U.S. Serial No. 09/584,489

Group Art Unit 1773

Filed: June 1, 2000

Examiner: K. Krueer

ACID STABLE AQUEOUS DISPERSION  
OF METAL PARTICLES AND APPLICATIONS

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

Transmitted herewith is the Appeal Brief in the above-identified application.

☒ Appeal Brief fee enclosed of ~~\$165.00~~ / \$330.00.  
☐ Small entity status of this application has been established.

☒ This Appeal Brief is being filed within the period set for filing.

☐ Appellant(s) hereby petition for an extension for filing this Appeal Brief as follows:

<input type="checkbox"/> First-Month Extension.....	\$ 55.00 / \$ 110.00
<input type="checkbox"/> Second-Month Extension.....	\$ 210.00 / \$ 420.00
<input type="checkbox"/> Third-Month Extension.....	\$ 475.00 / \$ 950.00
<input type="checkbox"/> Fourth-Month Extension.....	\$ 740.00 / \$ 1480.00

A check in the amount of \$ 330.00 is attached hereto.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-3690 of the undersigned attorney. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

*Wang Breiner*  
\_\_\_\_\_  
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Date: March 22, 2004

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"PATENT APPLICATION"



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K. Kruer, Examiner

ACID STABLE AQUEOUS DISPERSION  
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March 22, 2004

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Alexandria, Virginia 22313-1450

B R I E F   O N   A P P E A L

Dear Sir:

This appeal is from the action of the Primary Examiner in finally rejecting claims 3-9, 11, 12, 14, 20-22 and 24.

Appellants' brief fee of \$330 is attached. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-3690 of the undersigned attorney.

Real Party in Interest

The named inventors of the captioned application have assigned their entire rights to Agfa-Gevaert, N.V., a corporation organized under the laws of Belgium, located in Mortsel, Belgium.

Related Appeals and Interferences

No appeal or interference is known to appellants which will directly affect or be directly affected by or have a bearing on the Board's decision in this pending appeal.

Status of Claims

The claims pending in this application are claims 3-9, 11, 12, 14, 20-22 and 24.

The application as originally filed contained claims 1-19. Claims 1-2, 10, 13 and 15-19 were canceled; claims 3, 9 and 12 were amended and claims 20-24 were added by the Amendment filed October 8, 2002. Claims 1-2 and 16-19 are directed to non-elected subject matter and claims 10, 13 and 15 were stated to be drawn to non-statutory subject matter. Claims 10, 13 and 15 were rewritten as claims 22-24. Claim 23 was canceled in the Amendment filed May 12, 2003. Accordingly, the appealed claims are 3-9, 11, 12, 14, 20-22 and 24 as set forth in the Appendix hereto.

Status of Amendments

An Amendment was filed on January 8, 2004 in response to the final official action mailed July 22, 2003. The amendments made were to formal matters in the specification. No claims were amended. The Amendment was

stated to be entered in the Advisory Action mailed February 9, 2004.

Summary of Invention

The present invention of the claims now under consideration are directed to (as described at pages 6-7 of the specification) a sheet or web material comprising a support and a metal layer coated from an aqueous composition which in turn comprises a dispersion of metal or metal alloy particles, prepared by chemical reduction of metal ions in aqueous medium, wherein (1) said dispersion has a concentration of at least 20 g of particles per liter, (2) said particles show an average size between 5 and 200 nm, and (3) said aqueous composition further includes a N-quaternized cellulose as binder. Preferred binders suitable for use are cellulose, 2-hydroxyethylether, and a polymer with N,N,-dimethyl-N-2-propenyl-2-propen-1-aminium chloride (Chemical Abstract Index name).

A protective binder is included in the aqueous composition involved in making the sheet or web material in order to keep the metal particles formed by reduction in colloidal dispersion. The essence of the invention is that the binder is a N-quaternized cellulose (page 8, lines 8-13). Due to the presence of the quaternary ammonium groups, protonation reactions resulting from the acid pH

conditions caused by the addition of the (hypo)phosphorous acid, no longer occur and as a result the colloidal stability of the composition containing the metal particles is maintained even in a pH range of from 5-1. Further, under storage conditions of high humidity, a Dmax decrease no longer occurs in the coated bismuth layer (page 8, lines 21-27).

According to the metal chosen, the sheet or web material may be used as heat mode recording material, as soft or semi-soft magnetic element, or as conductive layer after a special oxidizing treatment (page 7, lines 1-4). For the preparation of a heat mode recording material the preferred metal particles in the aqueous coating solution are bismuth particles. For the application as magnetic layer, the metal is nickel or a mixture of nickel with one or more other metals. When the purpose is to prepare a metal oxide based conductive layer the preferred metal is tin optionally mixed with one or more other metals.

#### The Issues

The issues of the present appeal are:

A. whether claims 3-8, 14 and 22 are patentable under 35 U.S.C. §103(a) over EP 0 875 889 A1 (Daems) in view of U.S. Patent No. 5,994,530 (Posey-Dowty);

B. whether claims 3-9, 14 and 21-22 are patentable under 35 U.S.C. §103(a) over U.S. Patent No. 6,187,508 (Andriessen) in view of Posey-Dowty;

C. whether claims 11 and 12 are patentable under 35 U.S.C. §103(a) over Andriessen or Daems in view of Posey-Dowty as applied above and further in view of U.S. Patent No. 4,405,706 (Takahashi);

D. whether claim 20 is patentable under 35 U.S.C. §103(a) over Andriessen or Daems in view of Posey-Dowty as applied above, and further in view of applicants' admission of record, i.e., that N-quaternized cellulose compounds per se are commercially available; and

E. whether claim 24 is patentable under 35 U.S.C. §103(a) over Andriessen or Daems in view of Posey-Dowty as applied above.

#### Grouping of Claims

The claims will be argued as follows:

Claims 3-9, 11-12, 14, 21-22 and 24 as one group and claim 20 as a second group.

Accordingly, all the claims do not stand or fall together.

Argument

I. Availability of Andriessen As A Reference

Initially, as raised in the Amendment After Final Rejection filed January 8, 2004, appellants note that Andriessen is not available as a reference under 35 U.S.C. §103(c). Each of Andriessen and the captioned application are commonly owned by Agfa-Gevaert as shown by the assignments of record. In the Advisory Action mailed February 9, 2004, the Examiner stated that the statement of common ownership required clarification in that common ownership has to be present at the time the invention was made.

Accordingly, appellants state that the present application Serial No. 09/584,489 and U.S. Patent No. 6,187,508 (Andriessen) were, at the time the invention of Serial No. 09/584,489 was made, jointly owned by Agfa-Gevaert, a corporation of Belgium located in Mortsel, Belgium.

Thus, Andriessen is not available as a reference. In view thereof, the issues on appeal are as follows:

A. whether claims 3-8, 14 and 22 are patentable under 35 U.S.C. §103(a) over EP 0 875 889 A1 (Daems) in view of U.S. Patent No. 5,994,530 (Posey-Dowty);

B. whether claims 11 and 12 are patentable under 35 U.S.C. §103(a) over Daems in view of Posey-Dowty as

applied above and further in view of U.S. Patent No.  
4,405,706 (Takahashi);

C. whether claim 20 is patentable under 35  
U.S.C. §103(a) over Daems in view of Posey-Dowty as applied  
above, and further in view of applicants' admission of  
record, i.e., that N-quaternized cellulose compounds per se  
are commercially available; and

D. whether claim 24 is patentable under 35  
U.S.C. §103(a) over Daems in view of Posey-Dowty as applied  
above.

The rejection of claims 3-9, 14 and 21-22 over Andriessen  
and Posey-Dowty no longer applies since Posey-Dowty is  
insufficient alone as evident from the Examiner basing the  
rejection on a combination of references, one of which is no  
longer available. Additionally, since claims 9 and 21 were  
only rejected based on the combination of Andriessen and  
Posey-Dowty, appellants submit that claims 9 and 21 thus are  
now allowable as no longer being subject to a rejection.

The above four issues A-D are the issues which  
will be addressed below.

## II. Rejections Under 35 U.S.C. §103

The primary reference applied with respect to each  
rejection is Daems. The secondary reference combined with  
Daems in each rejection is Posey-Dowty. Takahashi is only



applied as to added limitations in claims 11-12. Appellants admission that N-quaternized cellulose compounds per se are commercially available is only applied with respect to the limitations of claims 20.

With respect to the claimed invention, an essential element is the inclusion of a N-quaternized cellulose as a binder. Daems does not teach the claimed cellulose. This has been acknowledged by the Examiner. The Examiner thus relies on Posey-Dowty for the teaching of the claimed N-quaternized cellulose based on the disclosure therein of (1) certain carboxymethyl cellulose (CMC) esters that are useful as a wetting agent and in certain high solids coatings and (2) that such CMC esters can be treated with ammonia and result in the production of a N-quaternized cellulose. The treatment with ammonia or an amine as taught in Posey-Dowty, however, does not provide a N-quaternized cellulose as claimed since N-quaternized celluloses have positively charged nitrogen atoms with 4 covalent bonds built into the polymer structure.

More specifically, Posey-Dowty describes pigment dispersions containing certain cellulose ester derivatives, namely C<sub>2-4</sub> esters of carboxy (C<sub>1-3</sub>) cellulose, such as carboxy methyl cellulose. N-quaternized celluloses as claimed by appellants are not encompassed by the esters disclosed in Posey-Dowty since such esters do not contain

quaternized nitrogen groups, i.e., nitrogen atoms having a positive charge and four chemical bonds.

Further, Posey-Dowty does not intrinsically disclose at column 3, lines 56+, N-quaternized derivatives of specific esters. The addition of ammonia or an amine will only produce a more soluble ammonium salt. Such salt, however, is not a N-quaternized derivative which is a compound having positively charged nitrogen atoms, each with 4 covalent bonds and built into the polymeric molecular structure of the cellulose derivative.

The Examiner responded by asserting that there is no support in the specification for limiting N-quaternized celluloses to such structure and that the prior art in U.S. Patent No. 4,617,835 at column 4, lines 9+ recognizes preparation of N-quaternized CMC from mixing and reacting a solution of CMC with an appropriate quaternary ammonium solution. Appellants respectfully submit that (1) one skilled in the art would understand that an N-quaternized cellulose has a positively charged nitrogen with 4 covalent bonds due to the structure of the named chemical and as further supported by the examples in the specification, and (2) reaction of a quaternary ammonium compound with CMC is not the same as the treating of a CMC ester with an amine or ammonia as taught in Posey-Dowty.

More specifically as to the structure of the claimed N-quaternized cellulose, the prefix "N-" indicates that the radical is attached to a nitrogen atom [see page 444 of Hackh's Chemical Dictionary, 4th Edition, 1969 (submitted as an attachment to appellants' January 8, 2004 Amendment)]. The group of compounds derived from ammonia by substituting radicals for attached hydrogens are as follows: primary substitution ( $H_2NR$ ) are amines, secondary substitution ( $RHNR$ ) are imines, tertiary substitution ( $R_2NR$ ) are nitriles, and quaternary substitution ( $R_4NOH$ ) are ammonium. Quaternary amines are tetraalkyl ammonium bases or compounds derived from ammonium hydroxide containing four radicals [Page 35, Hackh's Chemical Dictionary, supra (submitted as an attachment to appellants' January 8, 2004 Amendment)]. Thus, the claimed "N-quaternized cellulose" is clearly a positively charged nitrogen with 4 covalent bonds. This is further supported by the preferred N-quaternized celluloses disclosed in the specification at page 6, lines 28-32 and page 8, lines 12-20, e.g. cellulose, 2-hydroxyethylether, polymer with N,N-dimethyl-N-2-propenyl-2-propenyl-2-propen-1-aminium chloride (CA Registry No. 92183-41-0). Thus, the cellulose contains at least one primary, secondary or tertiary amino group which has been reacted with a substituted or unsubstituted alkyl or substituted or unsubstituted aryl halide, whose substituted or

unsubstituted alkyl or substituted or unsubstituted aryl group becomes covalently bonded to the at least one primary, secondary or tertiary amino group resulting in the nitrogen atom of the at least one amino group becoming positively charged, this positive charge being compensated by the halide ion.

Posey-Dowty does not provide any teaching or suggestion as to a N-quaternized cellulose binder but rather teaches CMC esters. Such structure is not disclosed as including N-quaternized cellulose. The description in Posey-Dowty of treating the CMC ester with an amine or ammonia is to disperse the CMC ester in a waterborne formulation (see column 3, lines 56-58; column 7, line 66-column 8, line 17; column 8, lines 29-37; and column 8, lines 59-63). Thus, the treatment with an amine or ammonia is for neutralization to provide a dispersion of the CMC ester. Accordingly, appellants submit that the Examiner is reading into the disclosure of Posey-Dowty through hindsight rather than considering the disclosure as a whole. The teaching of U.S. Patent No. 4,617,385 (noted by the Examiner but not formally applied) does not add to this teaching since there is no teaching or suggestion of reacting a CMC ester with a quaternary ammonium salt in Posey-Dowty.

Accordingly, neither of Daems nor Posey-Dowty teach or suggest the claimed N-quaternized cellulose binder.

Takahashi is relied on solely with regard to the added limitations present in claims 11 and 12. Takahashi does not make up for the shortcomings of Daems or Posey-Dowty. Takahashi contains no teaching or suggestion as to N-quaternized cellulose. Takahashi is relied on for teaching the inclusion of nickel and its alloys in a heat mode recording medium. Nickel and its alloys have been known as useful in metal layers in heat mode recording materials where metal layers are obtained using traditional methods such as evaporation deposition, sputtering, etc. However, nickel and its alloys are not taught or suggested for use in metal layers including N-quaternized cellulose as a binder. Therefore, it is respectfully submitted that it would not have been obvious to one of ordinary skill in the art to use nickel or its alloys in an aqueous composition as claimed including N-quaternized cellulose as a binder.

With respect to the rejection of claim 20, appellants admission of record that N-quaternized cellulose compounds per se are commercially available, as applied in combination with Daems and Posey-Dowty against claim 20, also does not make up for the shortcomings of Daems or Posey-Dowty. It is recognized that inventions often are composed of known or old components but that the combination including such are novel. Thus, as the Court of Appeals for

the Federal Circuit stated in In re Rouffet, 47 USPQ2d 1453  
(Fed. Cir. 1998):

"As this court has stated, "virtually all [inventions] are combinations of old elements." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698, 218 USPQ 865, 870 (Fed. Cir. 1983); see also *Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1579-80, 219 USPQ 8, 12 (Fed. Cir. 1983) ("Most, if not all, inventions are combinations and mostly of old elements."). Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570. 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).

To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed."

In the present instance, appellants' invention is not the N-quaternized cellulose compound per se but the combination of such compound in an aqueous composition additionally including defined particles in a dispersion, wherein the composition is coated on a metal layer present in a sheet or web material. Accordingly, the combination of claim 20 is

not taught or suggested by the applied art so as to render the claimed invention obvious within the meaning of 35 U.S.C. §103.

III. Additional Applicable Case Law

The burden of establishing a prima facie case of obviousness requires a showing of some objective teaching in the prior art or from knowledge generally available to one of ordinary skill in the art that would lead that individual to combine the relevant teachings of the references. Ex parte Levengood, 28 USPQ 2d 1300, 1302 (BPAI 1993). The Board went on to further state that accordingly, an Examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done. Ex parte Levengood, supra, at 1302. It is now well settled that a rejection under 35 U.S.C. §103 must rest on a firm factual basis and that the Examiner has the initial duty of providing that factual basis. Deficiencies in the factual basis cannot be supplied by resorting to speculation or unsupported generalities. In re Warner, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967) and In re Freed, 425 F.2d 785, 165 USPQ 570 (CCPA 1970).

Further, the mere fact that the prior art can be modified does not make the modification obvious unless the prior art suggests the desirability of the modification. In re Gordon, 733 F.2d 900, 902; 221 USPQ 1125 (Fed. Cir. 1984). Once applicants' solution to a problem is disclosed, it is easy to see how prior art references can be modified and manipulated to produce the claimed invention. The change can appear simple and by hindsight seem obvious. However, as stated by the Court in In re Sporck, 133 USPQ 360, 363 (CCPA 1962), the simplicity of new inventions is oftentimes the very thing that is not obvious before they are made. In finding obviousness of the claimed invention over a combination of references, or over a single reference, a reason must appear in the prior art for making the combination or for selecting the different features of a single reference. The court in In re Newell, 13 USPQ 2d 1248 (Fed. Cir. 1989), at page 1250, stated -

"It is well established that in deciding that a novel combination would have been obvious, there must be supporting teaching in the prior art.

'That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown.' In re Spormann, 363 F.2d 444, 448, 150 USPQ 449, 452 (CCPA 1966)."



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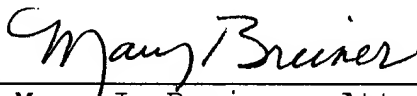
Thus, appellants submit that the claimed invention is not rendered obvious within the meaning of §103 over the various combinations of references as set forth above.

Conclusion

It is respectfully submitted that the appealed claims are patentable within the meaning of 35 U.S.C. §103. Reversal of the Examiner's rejections is, therefore, respectfully urged.

Respectfully submitted,

HIERONYMUS ANDRIESSEN ET AL

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Attachment - Appendix

The Appealed Claims:

3. A sheet or web material comprising a support and a metal layer coated from an aqueous composition comprising a dispersion of metal or metal alloy particles, prepared by chemical reduction of metal ions in aqueous medium, wherein (1) said dispersion has a concentration of at least 20 g of particles per liter, (2) said particles show an average size between 5 and 200 nm, and (3) said aqueous composition further includes a N-quaternized cellulose as binder.

4. A sheet or web material according to claim 3 wherein said support is a transparent support.

5. A sheet or web material according to claim 3 wherein said coated metal layer is a bismuth layer.

6. A sheet or web material according to claim 3 wherein said material further comprises a protective layer or layer pack.

7. A sheet or web material according to claim 6 wherein said protective layer pack comprises an adhesive layer and an outermost polymeric resin foil.

8. A sheet or web material according to claim 6 wherein said protective layer pack comprises a soft polymeric layer and an outermost hard polymeric layer.

9. A sheet or web material according to claim 3 wherein said metal layer further comprises hypophosphorous acid, or phosphorous acid, or a mixture of both.

11. A sheet or web material according to claim 3 wherein said metal particles comprise nickel particles.

12. A sheet or web material according to claim 11 wherein said metal particles further comprise iron particles, cobalt particles or molybdenum particles or mixture thereof.

14. A sheet or web material according to claim 3 wherein said metal particles comprise tin particles.

20. A sheet or web material according to claim 3 wherein said N-quaternized cellulose is cellulose, 2-hydroxyethylether, polymer with N,N,-dimethyl-N-2-propenyl-2-propen-1-aminium chloride (Chemical Abstract Index Name).

21. A sheet or web material according to claim 6 wherein said protective layer or layer pack further comprises hypophosphorous acid, or phosphorous acid, or a mixture of both.

22. A sheet or web material according to claim 3 wherein said material is subjected to image-wise exposure by laser radiation.

24. A sheet or web material according to claim 3 wherein said material is subjected to oxidative treatment to provide a metal oxide-based conductive element.

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